Polar Capital Global Healthcare Team

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How the Healthcare Industry is tackling COVID-19

In conversation, Daniel Mahony and Gareth Powell, the two founders and co-heads of Polar Capital's healthcare team, highlight some of the rapid advances being made by the healthcare industry in the fight against COVID-19 and provide a timeline or road map of when we may hear about potential progress of these efforts.

Daniel Mahony (DM): We see three areas that will be critical to understanding the near and long-term impact of this disease. First, diagnostic testing is critical for understanding the scale of the problem in the near term. We see a few therapeutics in development that may ameliorate the effects of the disease and ultimately a vaccine could prevent any further outbreaks of the disease.

The World Health Organisation has been very clear in its message. On 16 March, Dr Tedros Adhanom Ghebreyesus, Director General of the World Health Organization, speaking at a virtual press conference, said: "We have a simple message for all countries: test, test, test." This is our key message: test, test, test. You may have heard about the mathematical models of the disease which have generated a lot of debate on social media. We need more data to refine the assumptions in those models and come up with a better understanding of how this epidemic has and will progress over the coming weeks.

Q: Can you explain what the different tests are?

DM: There are two types of test. The first detects the virus from a patient sample using a throat swab to determine if there is an active viral infection. This is the viral test, sometimes called the antigen test. Many companies have now developed these tests and the regulators have been rushing through approval over the past two or three weeks. The technology behind them has been around for years but the challenge is now logistics and the scaling-up of testing. This week, Germany will be close to performing 500,000 tests per week so is way ahead of the rest of the world. The UK is currently running only about 50,000 per week although there are plans to scale up. The lack of testing has been a real problem in the US as well.

The second type of test is a so-called antibody test, a simple type of blood test – again, the detection technology is not new – and this determines whether an individual has antibodies against the virus indicating they have been infected in the past. There are many companies trying to develop these tests that we know of, but it is critical they are properly evaluated. There are some coming out of China which have turned out to not perform particularly well, as well as one in Spain. The evaluation means you can determine what the false positive rate and the false negative rate is for such a test. In our view, this second type of test will be critical for determining the scale of the disease, especially as many people have been infected but experienced only mild symptoms. At present, there is no way of determining how many of these people there are. However, we are going to need millions of these tests and there will be a logistical problem of delivering these to individuals and collecting data, but this is not insurmountable. In the near term, I think this will be critical for us understanding what the scale of the problem actually is.

Gareth Powell (GP): Pharmaceutical and biotech companies and academia are working 24/7 to generate both therapeutics to treat COVID-19 and vaccines to protect patients from infection. For example, there are currently 202 clinical trial listings, 88 studies actively recruiting – 44 focussed on therapeutic treatments and vaccines – and 22 trials with study completion dates over the next 12 months. There is tremendous support from regulatory bodies, as you can imagine, to boost the speed at which these products can be used in patients. Focussing on the efforts to develop treatments first, there are three categories that are being worked on currently: antivirals, anti-inflammatories and antibody drugs.

Dealing with the antivirals, the idea is to treat a patient with these drugs once diagnosed to inhibit replication of the virus plus lower the impact of symptoms, allowing patients to stay out of hospital or leave much earlier without developing the most serious effects caused by the virus. Several drugs have been used on a compassionate basis so far across the globe, but robust clinical data has not been generated yet.

Many clinical trials are already ongoing. Chloroquine and Hydroxyl-Chloroquine are treatments currently used to treat malaria and there is significant supply available for these two products. At the request of President Trump, the US has been ordering vast quantities, however early data is mixed and there are toxicity challenges. More data should be available in coming weeks. Favipiravir is a weak antiviral that has been used to treat patients in Asia with some early encouraging evidence although more controlled data is needed which should be coming soon.

Last, perhaps the most significant compound in development by Gilead is Remdesivir, a potent antiviral drug initially developed for Ebola and quickly refocussed towards COVID-19. The drug is in four trials which should read out results in April. Gilead is building a manufacturing capability and seems optimistic considering the pre-clinical profile of the drug.

Q: And what about the second set of drugs in clinical trials?

GP: These are anti-inflammatory agents. In patients who unfortunately experience a more serious infection, the immune system can, in simple terms, go out of control in what is described as a cytokine storm. This can lead to serious lung damage and a poor outlook for the patient. Actemra and Kevzara are currently used to treat rheumatoid arthritis which is an autoimmune disease. They target a cytokine called Interleukin 6 (IL6) which is released as part of this cytokine storm. These drugs have been used in patients with positive reports and the companies are running trials as we speak to see if these two drugs are effective. Synairgen, a UK-based biotech company, is starting a trial using their development candidate which is inhaled Interferon Beta, designed to regulate antiviral defences in the lungs particularly in patients considered the most at risk from COVID-19. Data from these studies with these drugs are due in the next two to three months.

The third category of products in development are antibodies used directly to block the virus as a treatment but also as prophylactic agents. The first class of antibody products are those being developed by companies that currently collect and filter plasma products from blood donors used to treat a variety of mineralogical disease. The idea here is to generate these to fight off COVID-19 infection. Novel antibodies are being developed artificially as opposed to taking them from donors. Antibodies target the virus and then two or three of these are chosen as a mixture to be used as a treatment or as a prophylactic product on healthcare workers for example. For instance, Regeneron has previously been successful in rapidly developing antibodies against Ebola during the most recent outbreak in Africa.

DM: Of course, vaccines are the long-term, ultimate goal for prevention and from what we can see there are currently 54 vaccine candidates in development. They broadly fall into two categories. I will not go into the science behind all of them, but they are so-called RNA vaccines – the leader there is a US company called Moderna – that are undergoing clinical trials. There are another three or four organisations that have similar technologies that hope to be on clinical trial, presumably within the next two or three months.

The other approach is using a viral vector to attack a virus. It essentially uses a copy of the protein from the COV-2 virus and introduces that into a patient using a viral vector to cause an immune response. There are, as I said, about 40 or 50 of these in development right now. The leader is a Chinese company called CanSino but there is also Johnson & Johnson and a really interesting programme coming out of Oxford that will all go into the clinic within weeks.

What I would say here is that the companies have been saying that a novel vaccine is at least 12-18 months away. I think that is when you may get the first data. The real problem with a vaccine is you are going to have to make hundreds of millions of doses so manufacturing and scale-up will be really important to get this out to the general public. It is certainly something we need to keep an eye on because if these are safe, and even if they have modest efficacy, they may be enough to stem a major pandemic spreading for a protracted period of time.

Q: What timeline do you have in mind, for the science as well as the economic impact of coronavirus?

DM: While we think this is a medical problem, medical progress could have an impact more broadly on stock markets as, obviously, there is a huge economic impact from having all these lockdowns. Over the next month we are going to hopefully see some data from Remdesivir as well as the disease progression alongside the impact of the lockdowns that have occurred in Europe, the UK and ultimately what the impact is going to be in the US. I also think within a few weeks, so hopefully within May, we will start seeing some of the data from the antibody test to see how many people have been infected. I think this might be really critical for how to ease the lockdown. Governments are looking for scientific ways of determining who could be safe to go back to work so we can get the economy going.

In the second half of the year, we should get data from other clinical programmes as well as the first safety data from the vaccine programme but what is really critical is a potential re-emergence of COVID-19 next winter. This is something that makes governments very worried because if you go back through the data, particularly with Spanish Flu back a hundred years ago, you see different waves of infection as a pandemic with a brand new virus never seen before and how it spreads through a global population. It is important that if we have some clinical tools or drugs that can slow the progression of a disease, people may still become infected but we will be able to keep them healthier and that may be really important as we go into next year and beyond.

We have not talked about our investment strategy here as it is not pertinent today but, as always, we are available by phone. We are happy to chat through any of this in more detail and also tell you a little bit about what we have been doing with our portfolios. Thank you for reading and we hope everyone stays healthy.

Daniel Mahony and Gareth Powell - Co-Founders, Polar Capital Healthcare Team
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